DOCUMENT RESUME

ED 099 203 SE 017 718

AUTHOR Poole, Richard L.
TITLE An Instructional Paradigm and the Development of Diet History Materials.
PUB DATE [74]
NOTE 21p.

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS *Dietetics; Educational Research; Instruction; *Instructional Materials; Models; Program Descriptions; Science Education; *Teaching Models

ABSTRACT

This article describes an instructional program which starts with the student and then identifies three elements which operate interactively as a means to achieving desired ends. The three elements (educational objectives, learning experiences, and evaluation activities), when specified and cross-checked, yield a configuration indicating what the student is to achieve, how he is to achieve it, and how he will know he has achieved it. The goodness of fit of the program was depicted by developing instructional materials to assist students in completing a diet history. The design of the forms called for the gradual shaping of the students' behavior over two distinctive periods of instruction and incorporating a self-scoring diagnostic checklist. The forms were in the developing stage at the time of this publication. Copies of the forms are included. (Author/EB)

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED 099203

# An instructional paradigm and the development of diet history materials.[1]

RICHARD L. POOLE, PH.D.
Ohio State University

[1] The writer gratefully acknowledges the opportunity provided by M. J. Reddout and J. Mackin to develop earlier versions of the forms presented here.

SE 017 718

Résumé

An instructional paradigm is described which starts with the student and then identifies three elements which if specified should unify the instructional process to yield what was intended, inaugurated, and achieved. Its uniqueness makes it a natural for the development of instructional materials within clinical programs. To support this position diet history instructional materials are developed and discussed from the viewpoint of the student and the instructional process. Although the forms were used by students the results are unclear because of procedure and sample problems. If one is willing to ignore these problems, then it is possible to conclude that the forms did assist the student in the acquisition of the skill.

The construction of instructional materials is usually a long, arduous and repetitive looping process involving the inputs of all people involved in the educational process. However, for purposes of clarity in the expenditure of resources it appears worthwhile not to construe curriculum with instruction. Johnston (1) has indicated that "surely curriculum must play some role in guiding instruction," but when it is defined as "a structured series of intended learning outcomes," its role becomes that of prescribing the results of instruction. The role in instruction is to "deliver" the curriculum, and as such its paramount characteristic is one of interaction between the student and the environment. This interaction "actualizes" for the student the intended learning outcomes of the curriculum.

The task of the people involved in the instructional process is not only the maximization of student learning, but also the minimization of student learning time. Clearly, in an institutional setting, a source of information for achieving this outcome, if not the most potential source is the student himself. However, the contributions of teachers based upon their expertise and experience are not to be ignored.

In the field of Dietetics, the type of programs which not only has the greatest potential to achieve such a task, but are indeed designed to implement it are the Clinical Dietetic programs. Recently, Reddout (2) reported on a program in existence at the State University College of New York at Buffalo. The themes of this article are to elaborate on a process employed to develop materials within that program and also to report on materials which have subsequently been developed.

## Instructional Planning Triad

Instruction may be viewed from any number of ways, but if it is to be something other than an accidental or random process it will require planning. Tyler (3) viewed instruction as having four steps, namely:

1. Specifying the changes to be made in student behavior.
2. Determining the content and learning experiences which may be used to bring about the changes in student behavior.
3. Organizing or arranging the learning experiences to efficiently bring about these changes in student behavior.
4. Evaluating or appraising the success of the learning experiences in bringing about these changes in student behavior.

If as a forerunner to these four steps we acknowledge the supremacy of the student, then it is possible to represent instructional planning as in Figure 1.

---

(Insert Figure 1. about here)

---

The implication of this conceptualization of instructional planning is that the individual student is the nucleus, that each separate element -- objectives, experiences, and evaluation -- is dualistically related to the remaining two elements, and that any two elements taken as a unit define the remaining element. In regard to the figure itself, the student is represented at the center, each element is represented at one of the three corners, and two elements taken as a unit are respectively represented by the three sides of the triangle.

## The Instructional Planning Elements

The Student

Conceptually and symbolically the student is depicted at the center and therefore indicates his prominence. It is the student who selects, inputs, or accepts the specification of the educational objective which in turn may lead both him and the teacher to the selection of a particular learning experience which they feel should bring about his learning. In conjunction with this there is also the determination of evaluation activities.

The Educational Objective

One of the three elements necessary for the planning of instruction is that of educational objectives. If the objectives have been identified and specified with sufficient clarity then the appropriate learning experiences and evaluation activities may be deductively determined. The clarity of the educational objective may relate to both subject matter and behavior, which then not only limits the particular aspect of subject matter to be treated, but restricts the particular behavior germane to the subject matter. However, the objective specification may only refer to subject matter, which then affords the student and teacher a broad selection of activities from which to choose, or the specification may only refer to the behavior, which then affords the student and teacher a wide selection of subject matter in which to bring about student learning. If the objective specification is vague, then its formulation must be determined from the other two elements so that a three-way consistency exists between all the elements. In the absence of such a three-way consistency it is possible for the student to believe that his charge or task is one thing, then in the learning experience with its

richness of stimulation shift positions, only to find at evaluation that obviously something else was expected of him.

The Learning Experiences

Learning experiences are ascribed to be those dynamic interactions between the student and his environment. The student's environment however is contingent to not only the external conditions of the environment itself, but also to the internal conditions of the student himself at the time of the interaction, encounter, or confrontation. The student must receive the experience, register it in an appropriate form so that it may be retrieved when a response is required. Unfortunately, based upon student performance the teaching environment apparently does not overlap the student's environment, for the actual results of instruction are not always consistent with the teacher's intended or expected results. Consequently, the teacher and the student must select and organize the environmental events to be of such logical and psychological enormity and substance to transcend the chasm between the students and those phenomena which deny him the heights of learning.

The Evaluation Activities

The evaluation activities are those devices and procedures such as objective tests and observational techniques which provide the student with the opportunity to demonstrate his newly acquired skills or knowledge. They initially supply the student with feedback as he is learning the specific aspects of knowledge called for and initiated in the learning experience. Later they corroborate and sustain his learning for application of the knowledge.

Relationship among Instructional Elements

The implication of the double headed arrows in the figure is that people involved in the instructional process must formulate a logical and hopefully, from the student's viewpoint, a psychological relationship between each of the three sets of elements: (1) educational objectives and learning experiences, (2) educational objectives and evaluation activities, and (3) learning experiences and evaluation activities.

If given one of these elements, then it is possible to formulate the other, but after the formulation is complete, one is obligated to reflect back upon it for consistency and appropriateness to the original element. For example if the objective is specified then it is possible to establish or select an appropriate learning experience for its realization. Similarly it is also possible to specify an appropriate evaluation activity. But after each is formulated, one must answer the question, " Is this learning experience and evaluation activity consistent with the objective, and will they contribute to the attainment of the objective by the student?"

Moreover, with any two elements specified, or given, it is possible to define the remaining element. If a teacher through experience has developed a particular learning activity to such a point that it is always a part of a course, and if corresponding evaluation activities have been developed, then that teacher may trace out her objectives by focusing upon what she sought in the evaluation activity and learning experience.

The significance of this for those involved in instruction is that it permits them to analyze an instructional situation into its respective ele-

ments so that finer specification can be made should it not yield desired results. Following this analysis, and the identification of the factor which is believed to have contributed to the student not learning the material, it is possible to synthesize a new instructional setting with a greater potential for student learning. It should also be realized that as conceptualized, instructional planning calls for the specification of three elements, and that the initial element specified does not have to be an educational objective. Hence, instructional planning may start from a particular learning experience of evaluation activity, but it is finished only when all three elements are specified.

Clinical Programs: Impetus and Inherent Problems

As previously indicated (2) the thrust of Clinical Dietetic programs is both on the correlation of the clinical experience with theory according to the student's unique educational needs, and on the building of individual levels of competency. The individual competencies to be cultivated relate to both knowing and doing, and therefore instruction must high-light both. Educational objectives, learning experiences and evaluation must focus upon knowledge and proficiency, which in turn requires achievement to be assessed by means of pencil and paper tests as well as performance tests. Both types of tests are designed to provide objective data for estimating the proficiency with which a task is performed. However, as indicated the task may be a process, result in a product, or be a process which yields a product; hence, "Which do you test?" Similarly, based upon the instructional triad, "Which do you teach?"

In the absence of any precedence, the most expeditious strategy seemed to be to adopt the assumption that there is a high positive correlation between a completed quality product and quality of process, but realize that the true relationship will evolve. The immediate concern for each student was an assessment of his level of competency, and perhaps an indication of his deficiencies. The ultimate concern for the program was the establishment of an enduring predictive relationship between what was asked of the student in terms of a completed quality product and process quality. With the advent of individualized instruction, the stress on performance, and the reduction of training time, it also appeared necessary to seek out a gradated sequence of competency levels for student attainment. Such a series of levels would not only permit a student to bypass particular segments of instruction, but would also certify to his present level of knowledge and skill. With such levels it would also be possible to place the student at the level of instruction consistent with his expertise. The three levels of competency could be assessed by means of the major types of performance tests, namely; (1) recognition tests, (2) tests involving simulated conditions, and (3) work sample tests. Such tests and procedures require a great deal of work, and should be as parsimonious as possible for both the examinee, the examiner, and the profession.

Apart from the problem of building performance measures, there is also the credibility problem of using "observer feedback" to change or note the behavior of the professional trainee or student. The richness of the clinical environment is not to be denied, but the possibility for error or student disbelief is there and must be reckoned with. There is some data in the field of

BEST COPY AVAILABLE

teacher education which indicates that the use of classroom observers seems to have limited impact upon changing the classroom behavior of teachers. Part of this problem no doubt is due to the fact that the observer is seen as an interloper between the teacher and his behavior. Consequently, to maximize the richness of the clinical experience the media of instruction should, in so far as possible, be an actual record of the student's responses or behavior in the simulated or work situation.

In addition to using these records for student evaluations, an ancillary outcome will be that of acquiring a rich source of material for the development of teaching or taining aids.

It is then incumbent for clinical programs to contain procedures which engender recorded student behaviors and responses so as to serve both the student and the program.

Diet History Instructional Materials

Dietitians are charged with the assessment of the patient's dietary needs and the interpretation of these needs to other members of the health team. The vehicle for the assessment of the patient's dietary needs is the diet interview, and one device for the interpretation of these needs to other members of the health team, is the diet history (DH) form. Although the actual structure and format of the DH form employed in the diet interview will vary according to the contributions of the members of the health team, the completion of the DH form for an accurate assessment of the patient's needs is imperative. However, the impression is conveyed that some forms are not completed (4). Perhaps this incompleteness is symptomatic of the student's

BEST COPY AVAILABLE

or trainee's lack of sophistication or his opinion that the form is inadequate for acquiring the necessary data. If the former, then practice may help. If the latter, then it might be desirable to give the student the opportunity to develop his own form. Recall, one of the lifetime goals of the dietitian (5) is competency in managing available resources in the providing of nutritional care. For our purposes we will assume that the student has been informed to the purpose of the form, and the possibility of its flexible format and structure.

It is also acknowledged that this instructional planning started with a desire to have students start to develop their interviewing skills, and also with the dissatisfaction of an existing DH form. The objective was then on the order of, "The student will complete or write in the information required on the DH form," and not on the order of, "The student will conduct a diet interview." The focus was on the product -- the completion of the DH form associated with the process -- diet interview.

Form Inadequacies and Learning Experience

Inspection of the DH form currently in use revealed several inadequacies. Initially there was the fact that although the form was divided into several sections, these sections were unlabelled and made instruction and referencing difficult. There was also the statement on the form itself which indicated that an addressograph plate was to be used to acquire this information and also perhaps hospital information. An implication of this was having a student complete a form without this information, and therefore increasing the probability of misassignment. Another deficiency which reflectes upon the

BEST COPY AVAILABLE



social insensitivity issue is that of designating meals breakfast, lunch, and dinner rather than meals #1, #2, and #3. This notion itself could be insensitive to the patient who doesn't eat three times a day, and suggests that the questions during the diet interview which relate to meals or eating should be stated in general terms. Lastly, the form did not provide any cueing, which meant that the student was required to bring-it-all-together at once. Several forms with varying amounts of cueing would permit the student to build his levels of competency.

DH Forms CX and CY were derived to correct these deficiencies, and may be seen respectively in Figures 2 and 3. The essential difference between these two forms is in the amount of cueing provided. Earlier versions of these forms were labelled AX and BX and were similar to these except for several changes made in section I. Putting it another way, sections II, III, and IV of these forms have not been changed. In the tryout of forms AX and BX, seventy-five percent of the students who used these forms indicated that more space was needed for section II, while about 40% indicated the same problem with section II and IV. One possible solution to the space problem for all the sections might be to put section III on the reverse side of the page. Other concerns with these newer forms might be the necessity for both "age" and "date of birth" in the patient information part which is unlabelled. Hence this part of the form could be combined with section I and labelled "Patient Information and Personal Data."

Still another concern might be the necessity and location of an entry dealing with "diet prescription?" Should the forms have such an entry, and if so where on the form should it be located? Why? Clearly experiences such as

BEST COPY AVAILABLE



these indicate that there are many more ways of going wrong, than going right, and therefore support the notion of more explicit instruction.

The learning experiences to be used in conjunction with these forms could be "simulation" and then "work sampling." Simulation could be maintained in the classroom until the students demonstrate a certain level of competency with Form CX and the Student Check List which is seen in Figure 4. Work sampling could be employed in the clinical experience until the student reaches a certain level of competency with Form CY with assessment by the clinical instructor.

A small number of students who employed Forms AX, BX and the Student Check Sheet following their experience with the older and inadequate DH form, produced more complete DH than they did orignially. Hopefully with simulation and work sampling of the kind indicated here, more definitive results may be obtained with these forms as the only instructional aids.

Student Evaluation

The kinds of tests used in work sampling are usually of two kinds: those involving a clear-cut distinction between "rightness" and "wrongness" and those involving an estimate of the demonstrated, "degree of skill." With experience and time it is to be expected that data will be acquired to set up guidelines for moving from clear-cut distinctions to ones of degree.

To assist the student with the "scoring" of his own forms, or the establishment of his level of competency, a Student Check List was written and is provided in Figure 4. When this check list is used in concert with DH Forms CX and CY, the student should not only have an indication of his deficiencies,

BEST COPY AVAILABLE



but also a clear idea of his level of competency.

Summary

This article describes an instructional paradigm which starts with the student and then identifies three elements which operate interactively as a means to achieving the desired ends. These three elements the educational objectives, the learning experiences, and the evaluation activities when specified and cross-checked yield a configuration which indicates what the student is to achieve, how he is to achieve it, and how he will know he has achieved it.

Because of the stress of clinical programs on student competency and on correlating theory with practice, and the provision of the proposed instructional paradigm to permit the development of materials from the specification of any one of its elements, it constituted a natural fit to a clinical program.

The goodness of fit was then depicted by developing instructional materials designed to assist students in completing a diet history. Specifically the design of the diet history forms called for the gradual shaping of the student's behavior over two distinctive periods of instruction and incorporating a self "scoring" diagnostic checklist. The forms are in the developmental stage and several deficiencies have been noted, and possible solutions given. The effects of employing the forms on the improvement of the student's ability to complete a diet history form are unclear. This lack of clarity is due in part to the small number of students who have used the forms, and also to the fact that the forms were used only after other activities associated with the diet history were performed. Ignoring these facts,

BEST COPY AVAILABLE

it was noted that with these forms there were fewer "mistakes." A spin-off of having the students input their findings in the use of the forms appeared to be the fostering of a spirit of mutual cooperation between everyone involved in the instructional process.

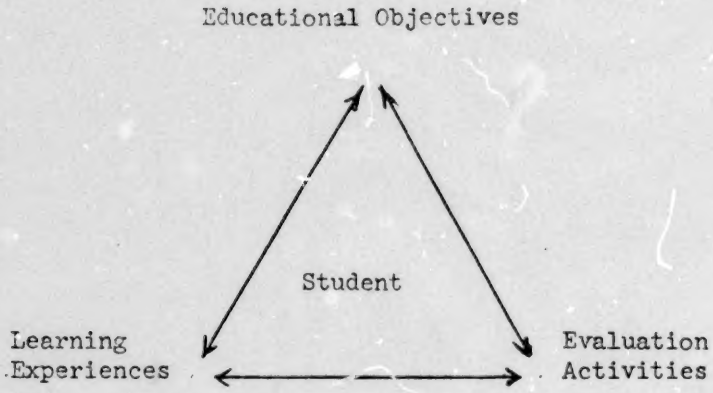


Figure I. The instructional planning triad.

FIGURE 2.

DIETARY HISTORY - Form CX PLR 3701

Patient's Name _____ Hospital No. _____ Room No. _____

Address _____ Date of Birth _____

City, State _____ Age _____

Interviewee if not patient _____ Date _____

I. Personal Data
Sex ( M F )
Height _____
Weight _____

Diagnosis _____
Marital Status (S M W D ) Occupation _____
Preferred Weight _____
Weight History _____

II. Factors Affecting Diet (occupation, race - religion, activity, economic status, physiological status, family situation)

III. Food Intake
Meal Number
Place & Time

Food Source avg./ day or week

Nutritional Value

#1

#2

#3

Snack

Meat _____
Milk _____
Cheese _____
Eggs _____
Fruit - citrus, non-citrus, _____ (fresh, dried, canned)

Vegetables - yellow, green, other (fresh, frozen, canned) _____

Bread _____
Cereal _____
Fats - butter, substitute _____
Beverages: _____
Coffee, coffee substitute, tea, Soft drinks, (carbonated, non-carbonated, sugar free) _____
Alcohol - beer, whiskey _____
Sweets - candy, pastry

Protein

Fats

Carbohydrates

Calories

Vitamin

Minerals

IV. Evaluation - Summary:

Interviewer: Credentials

BEST COPY AVAILABLE

FIGURE 3.

DIETARY HISTORY - Form CY PLR 3701

Patient's Name _____ Hospital No. _____ Room No. _____

Address _____ Date of Birth _____

City, State _____ Age _____

Interviewee if not patient _____ Date _____

I. Personal Data
Sex ( M F ) Diagnosis _____
Height _____ Marital Status (S M W D ) Occupation _____
Weight _____ Preferred Weight _____
Weight History _____

II. Factors Affecting Diet:

III.

| Food Intake | Food Source | Nutritional Value |
|---|---|---|
| Meal Number<br>Place & Time | | |
| #1 | Meat _____ | Protein |
| | Milk _____ | |
| | Cheese _____ | Fats |
| | Eggs _____ | |
| #2 | Fruit _____ | Carbohydrates |
| | Vegetables _____ | |
| | Bread _____ | Calories |
| #3 | Cereal _____ | |
| | Butter & substitutes _____ | Vitamin |
| Snack | Beverages _____ | |
| | Sweets _____ | Mineral |

IV. Evaluation - Summary:

Interviewer: _____

FIGURE 4.

BEST COPY AVAILABLE

Dietary History (DH) - Student Check List
Form BX RLP 3701

Directions: Listed below are a series of descriptive statements pertaining to a completed DH form. Read, inspect and compare your DH form with these statements and then record a check mark in the appropriate column (Yes - No). In addition, wherever you can write in the needed, corrected, or missing information with a different colored writing instrument.

| Yes | No | | |
|---|---|---|---|
| | | I. | Patient Information and Personal Data<br>Do the entries contain |
| ___ | ___ | | 1. any blanks? |
| ___ | ___ | | 2. any incomplete data (e.g., units, dates)? |
| ___ | ___ | | 3. an incorrect determination of the preferred or ideal weight? |
| ___ | ___ | | 4. an incorrect recording of the patient's weight? |
| ___ | ___ | | 5. an incorrect recording of the patient's height? |
| | | II. | Factors Affecting Diet<br>Do the statements contain an entry which |
| ___ | ___ | | 6. is ambiguous (e.g., - 6 brothers - 1 brother 6 yrs. old)? |
| ___ | ___ | | 7. is interpretative and not descriptive (e.g., patient inactive - not what he does)? |
| ___ | ___ | | 8. needs qualification (e.g., confinement and its duration, father buys ice cream several - how many - times/week)? |
| ___ | ___ | | 9. references physical or mental activity? |
| ___ | ___ | | 10. references economic status? |
| ___ | ___ | | 11. references the family situation? |
| ___ | ___ | | 12. references occupational constraints? |
| ___ | ___ | | 13. references physiological status? |
| ___ | ___ | | 14. references race or cultural concerns? |
| | | III. | Food Intake (average/day or week)<br>Do the entries contain |
| ___ | ___ | | 15. qualitative, not quantitative language (e.g., - 1 slice for 1 oz., or 1 slice estimated to be 1 oz.)? |
| ___ | ___ | | 16. information which belongs elsewhere on the DH form? |
| ___ | ___ | | 17. unaccepted symbols or abbreviations? |
| | | | Did this section indicate the |
| ___ | ___ | | 18. total caloric intake? |
| ___ | ___ | | 19. quantity of food intake? |
| ___ | ___ | | 20. quality of food intake? |
| ___ | ___ | | 21. protein value of the food intake? |
| ___ | ___ | | 22. carbohydrate value of the food intake? |
| ___ | ___ | | 23. type of fat in the food intake? |
| ___ | ___ | | 24. adequacy of vitamin and mineral intake? |

BEST COPY AVAILABLE

| Yes | No | |
|---|---|---|
| | | IV. Evaluation - Summary |
| ___ | ___ | 25. Did the statements summarize the findings of the patient's nutritional status? |
| | | V. General Comments on the DH form: Did the form contain |
| ___ | ___ | 26. at least one entry which is illegible? |
| ___ | ___ | 27. at least one entry which contained irrelevant material? |
| ___ | ___ | 28. at least one entry which is not brief and concise? |
| ___ | ___ | 29. entries which gave it a messy, sloppy or unorderly appearance? |
| ___ | ___ | 30. the credentials of the interviewer? |

References


1. Johnson, M. Jr.: Definitions and models in curriculum theory. Ed. Thy. 17:127, Apr. 1967.

2. Reddout, M.J.: An integrated curriculum in clinical dietetics. J. Am. Dietet. A. 62:420, 1973.

3. Tyler, R.W.: The functions of measurement in improving instruction. In Lindquist, E.F., ed.: Educational Measurement. Wash. D.C. American Council on Education, 1957.

4. Evans, S.N., Hsu, N., Gormican, A.: Use of computers for diet history. J. Am. Dietet. A. 63:397, 1973.

5. Comm on Goals of Ed. for Dietetic Internship Council, Am. Dietet. Assoc.: Goals of the lifetime education of the dietitian. J. Am. Dietet. A. 54:91, 1969.